

AMENDMENTS TO THE CLAIMS

This listing of claims will replace all prior versions and listings of claims in the application:

1. (currently amended) An apparatus for allocating [[a]] processing resources of a signal processor to signal processing functions in a queue waiting to be executed, which are associated with inputted signals, comprising:

a capacity determining means for determining an amount of the processor ~~resource~~ resources available to be assigned to the signal processing functions;

a load determining means for determining an estimate of an amount of the ~~resource~~ processing resources needed for each ~~function of the signal processing functions~~ waiting in the a queue to ~~execute~~ be executed;

a prioritization means for prioritizing each of the signal processing functions waiting in [[a]] the queue ~~waiting~~ to be executed; and

an allocating means, which ~~received~~ receives information from said capacity determining means, said loading means, and said prioritizing means, for allocating available ~~resource~~ processing resources to the signal processing functions waiting in the queue to be executed, based on a hierarchical priority scheme.

2. (currently amended) The apparatus of claim 1, wherein:

each of the signal processing functions are decomposed elements of a more complex process and do not require the same amount of ~~resource~~ the processor resources to execute.

3. (currently amended) The apparatus of claim 2, wherein:

multiple instances of any signal processing function within the more complex process may be invoked by the processor to can execute concurrently.

4. (currently amended) The apparatus of claim 3, wherein:
each of the signaling process functions within the more complex process is assigned a separate priority within the hierarchical priority scheme.
5. (currently amended) The apparatus of claim 4, wherein:
each instance of each signal processing function within the more complex process is assigned a separate priority within the hierarchical priority scheme.
6. (currently amended) The apparatus of claim 2, further comprising:
an assigning means, in communication with said allocation means, for assigning a resource throttling value to each function of the signal processing functions waiting in the queue to be executed, wherein the throttling value determines ~~the~~ a reduction of the resource processing resources allocated to each of the signal processing functions.
7. (currently amended) The apparatus of claim 1, wherein:
the ~~allocation of the~~ allocating available resource processing resources to the signal processing functions waiting in the queue to be executed is conducted to optimize ~~the~~ an amount of the assigned resource processing resources allocated to ~~these~~ the signal processing functions.
8. (currently amended) The apparatus of claim 1, wherein:
the ~~allocation of the~~ allocating available resource processing resources to the signal processing functions waiting in the queue to be executed is conducted to optimize a combined number of instances of each signal processing function being concurrently executed.
9. (currently amended) An apparatus for allocating [[a]] processing resource resources of a signal processor to signal processing functions in a queue waiting to be executed, which are associated with inputted signals, comprising:

a capacity determining means for determining an amount of the processor ~~resource~~
resources available to be assigned to the signal processing functions;

a load determining means for determining an estimate of an amount of the ~~resource~~
processing resources needed for each ~~function~~ of the signal processing functions waiting in ~~the a~~
queue to ~~execute~~ to be executed;

an allocating means, which receives information from said capacity determining means
and said load determining means, for allocating the available ~~resource~~ processing resources to
signal processing functions waiting in the queue to be executed, based on a hierarchical priority
scheme, wherein

said load determining means calculates a product, for each of j instances,
corresponding to each of said inputted signals, where $j = 1$ to m , and for each of k signal
processing functions associated with each of said j instances, where $k = 1$ to N , obtained by:

(a) estimating ~~the an~~ amount of ~~resource~~ processing resource needed to
support the execution of the j^{th} instance of the k^{th} signal processing function;

(b) assigning a value of either zero or one to a multiplicand associated
with the j^{th} instance of the k^{th} signal processing function; and

(c) multiplying the ~~estimated~~ amount of processing resource needed to
support the execution of the j^{th} instance of the k^{th} signal processing function by its associated
multiplicand and assigning the result to the product associated with the j^{th} instance of the k^{th}
signal processing function; and

said load determining means calculates a sub-total sum, for each of the j instances,
obtained by:

(d) summing together the products associated with each of the k signal
processing functions ~~[[of]]~~ associated with each of the j^{th} -instance j instances; and

(e) adding ~~an estimate~~ another estimated amount of the processing
resource needed to support background processing associated with each of the j^{th} -instance j
instances to the sum of products ~~associated with~~ of each of the k signal processing functions

associated with each of the j^{th} instance j instances and assigning the result to the sub-total for each of the j^{th} instance j instances.

10. (currently amended) The apparatus of claim 9, wherein:
the multiplicand value associated with the j^{th} instance of the k^{th} signal processing function is determined according to ~~the~~ a hierarchical priority scheme.
11. (currently amended) The apparatus of claim 9, wherein:
said load determining means repeats the steps (a) through (e), recited in ~~claim 19~~ claim 9,
for each of a number of sequential time periods; and
said allocating means reallocates the available ~~resource~~ processing resources to the signal processing functions in each of said time periods based on a hierarchical priority scheme.
12. (currently amended) The apparatus of claim 11, wherein:
said load determining means establishes a variable length time period that is no longer
than ~~the~~ a period needed to execute any one of the j instances ~~of the~~ and its associated k signal processing functions that are executing concurrently.
13. (currently amended) The apparatus of claim 11, further comprising:
for each of the j instances ~~of the~~ occurring over multiple time periods and its associated
 k^{th} signal processing function, said prioritization means assigns increasingly higher priority in
accordance with an increasingly greater number of time periods that have passed since the last j^{th}
instance of the k^{th} signal processing function was last executed.